Remarks/Arguments:

Reconsideration of the application is requested.

Claims 1-47 are now in the application. Claim 1 has been amended. Claims 41-47 have been added and the amendment is being filed with an RCE to enter the new claims. Support for new claim 42 can be found on page 21, line 25 to page 22, line 5 and in Figs. 11 and 12. Support for new claim 45 can be found on page 10, lines 1-4 and on page 15, lines 16-23. No new matter has been added. Claim 15-40 have been withdrawn from consideration.

In the second paragraph on page 2 of the Office action, claims 1-2, 4-5, 7-9, 11-12, and 14 have been rejected as being fully anticipated by Palagonia (U.S. Patent No. 5,874,782) under 35 U.S.C. § 102.

The rejection has been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. The claims are patentable for the reasons set forth below. Support for the change to claim 1 is found in Fig. 8 and on page 18, lines 9-20 of the specification.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, *inter alia*:

the at least one elevation having a geometrical shape for achieving a spring effect in directions extending parallel to the first surface.

Furthermore, it is noted that the different coefficients of thermal expansion for the chip and the external circuit produce lateral stress on the contacts. Therefore, it is an object of the present invention to improve the resistance of the contacts to the stresses caused by the different thermal expansion coefficients of the chip and the external circuit board.

The instant application discloses that the flexible elevation is relatively narrow in relation to its height. This allows the elevation to have a spring effect laterally but not orthogonally with respect to the chip. Therefore, the geometrical form of the elevation is important for the contact to function properly (page 18, lines 9-20).

The Palagonia reference discloses flexible contacts that are much wider than they are high.

The reference does not show the at least one elevation having a geometrical shape for achieving a spring effect in directions extending parallel to the first surface, as recited in claim 1 of the instant application. The Palagonia reference discloses flexible contacts that are much wider than they are high. The Palagonia reference does not disclose a geometrical shape that achieves a spring effect in directions extending parallel to the first surface. This is contrary to the invention of the instant application, in which the at least one elevation has a geometrical shape for achieving a spring effect in directions extending parallel to the first surface.

Since claim 1 is believed to be allowable, dependent claims 2, 4-5, 7, and 41 are believed to be allowable as well.

Further comments regarding the non-obviousness of claim 1 are given below.

Palagonia does not disclose that a lateral flexibility in the contact is desirable or that the geometrical form of the flexible elevation affects the flexible properties. As stated

by the Examiner in the final Office action, Palagonia only discloses that the height should be selected so that the surface conductors do not touch the substrate. Therefore, Palagonia does not teach that the ratio of the height to the width of the elevation be chosen so that the elevation has a flexibility only in the lateral plane. Accordingly, this embodiment of the present invention is not obvious over Palagonia.

Similarly, the contacts disclosed in Chen are also much wider than they are high and do not display a lateral flexibility. Furthermore, Chen does not disclose that the elastic properties of the elevation depend on its geometrical shape. Accordingly, this embodiment of the present invention is not obvious over Palagonia in view of Chen.

The following remarks pertain to claim 8.

As will be explained below, it is believed that claim 8 was patentable over the cited art in its original form and claim 8 has, therefore, not been amended to overcome the references.

Claim 8 calls for, *inter alia*:

a conduction path disposed in the interior between the at least one of the electrical contacts and the electronic circuit.

This construction allows the use of a flexible electrically conductive material, such as epoxy-based resin, within a flexible electrically insulating elevation. The elastic properties of the electrically insulating material used for the elevation are superior to those of electrically conducting resins and epoxies. Therefore, the construction according to this embodiment of the invention enables the flexibility of the contact to be maximized while the conducting path from the chip pad to the external surface is minimized.

The Palagonia reference discloses a conduction path on the outer surface of the elevation.

The reference does not show a conduction path disposed in the interior between the at least one of the electrical contacts and the electronic circuit, as recited in claim 8 of the instant application. The Palagonia reference discloses a conduction path on the outer surface of the elevation. This is contrary to the invention of the instant application, in which a conduction path is disposed in the interior between

the at least one of the electrical contacts and the electronic circuit.

Since claim 8 is believed to be allowable, dependent claims 9, 11-12, and 14 are believed to be allowable as well.

The following remarks pertain to new claim 42.

In the third paragraph on page 3 of the Office action, claims 3 and 10 have been rejected as being obvious over Palagonia (U.S. Patent No. 5,874,782) in view of Chen et al. (U.S. Patent No. 5,970,687) (hereinafter "Chen") under 35 U.S.C. § 103. Chen does not make up for the deficiencies of Palagonia. Since claims 1 and 8 are believed to be allowable, dependent claims 3 and 10 are believed to be allowable as well.

Because the Examiner has used this rejection with regard to the insulation layer, claim 42 will be discussed with regard to these references.

Claim 42 calls for, *inter alia*:

an insulation layer only partially covering the at least one elevation.

The Chen reference discloses elevations (320), which are completely covered by insulation (321).

The references do not show or suggest an insulation layer only partially covering the at least one elevation, as recited in claim 42 of the instant application. The Chen reference discloses that the elevations are completely covered by insulation. The Palagonia reference does not disclose an insulation layer only partially covering the at least one elevation. This is contrary to the invention of the instant application as claimed, in which an insulation layer only partially covers the at least one elevation.

Furthermore, the construction of the insulating layer according to the instant application is very advantageous. When a chip is mounted on a substrate, the difference in coefficients of thermal expansion between the chip and the substrate means that the contacts are pulled laterally outwards. Because the insulating layer 7, 11 is only semi-flexible, (it is less flexible or elastic than the elevation 3) it is unable to absorb the lateral stress as effectively as the elevation 3 and cracks or delaminates from the elevation 3. This in turn damages the metal conduction layer 8 and destroys the contact between the chip and the substrate. This

problem is avoided by only covering the inward facing surface of the elevation with the insulation.

Chen does not address the problem of lateral stress on the contacts. Therefore, the improvement according to the instant application is not obvious over Chen.

Since claim 42 is believe to be allowable, dependent claims 43 and 44 are believed to be allowable as well.

Even though claim 43 is believed to be allowable it is noted that regarding claim 43, Chen does not disclose that the outward facing surface of the at least one elevation remains free of insulation, as recited in claim 43 of the instant application.

The following comments pertain to claim 45.

Claim 45 calls for, *inter alia*:

a conduction path disposed on the rough regions of the elevation surface between the at least one of the electrical contacts and the electronic circuit.

The references do not show or suggest a conduction path disposed on the rough regions of the elevation surface between the at least one of the electrical contacts and the electronic circuit, as recited in claim 45 of the instant application.

Since claim 45 is believed to be allowable, dependent claims 46 and 47 are believed to be allowable as well.

In the last paragraph on page 3 of the Office action, claims 6 and 13 have been rejected as being obvious over Palagonia (U.S. Patent No. 5,874,782) in view of Lee et al. (U.S. Patent No. 6,140,456) under 35 U.S.C. § 103. Lee et al. do not make up for the deficiencies of Palagonia. Since claims 1 and 8 are believed to be allowable, dependent claims 6 and 13 are believed to be allowable as well.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claims 1, 8, 42, or 45. Claims 1, 8, 42, and 45 are, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claims 1, 8, 42, or 45, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1-14 and 41-47 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel respectfully requests a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made.

The fee for one additional independent claim in the amount of $86 is enclosed herewith.

Please charge any other fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner & Greenberg P.A., No. 12-1099.

Respectfully submitted,

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For Applicant(s)

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